BEHLMAN

OSCILLATOR SPECIFICATIONS
VARIABLE FREQUENCY

)EL NUMBER: OSN -2- 45/2000 -08-09-11-12-13(90°)

MANUAL NUMBER: 106-410-301
PART NUMBER : 106-410-301

MP MASTER
MA29439

BEHLMAN
An Astrosystems Company

Copy # 600

OSCILLATOR SPECIFICATIONS
VARIABLE FREQUENCY

MODEL NUMBER: OSN -2- 45/2000 -08-09-11-12-13(90°)

MANUAL NUMBER: 106-410-301
PART NUMBER : 106-410-301

FOR SERVICE ASSISTANCE

CONTACT BEHLMAN
CUSTOMER SERVICE DEPARTMENT

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DATE: 11/91 REVISION: A 106410301

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	WIRING DIAGRAM	106-421-301
	DISPLAY BOARD SCHEMATIC DIAGRAM	106-418-000
	DISPLAY BOARD COMPONENT	106-420-000

SECTION 1

INTRODUCTION

1.1 GENERAL DESCRIPTION

The reference oscillator used to control the frequency and voltage of the power amplifiers can be configurable in single phase, two phase (0°, 90°) and three phase (0°, 120°, 240°) options. Voltage and frequency can be adjusted either by front panel mounted potentiometers or by an externally applied DC voltage (0-10 Vdc).

Synchronization of the oscillator output with an externally applied signal is also possible. The sync signal should be approximately 3 Vrms and a frequency between 45Hz and 10KHz.

1.2 SPECIFICATIONS

FREQUENCY:	45/2000 Hz
ACCURACY:	0.01%
OUTPUT:	Output voltage of Bϕ is 120° out of phase with the output voltage of Aϕ.

1.3 OPTIONS

-08	Indicates an external 0-10 Vdc programmable amplitude.
-09	Synchronization with external signal.
-10	Signifies locking potentiometers.
-11	Old style connector for replacement orders **ONLY**. (Must be accompanied by previous sales order).
-12	Indicates an external 0-10 Vdc programmable frequency.
-13	Specifies that unit has phase shift.

SECTION 2

INSTALLATION

The reference oscillator is designed to plug into the front panel of any Behlman ACM Power Source and has been installed in the unit by the manufacturer.

SECTION 3

OPERATION

3.1 TO OPERATE EQUIPMENT

3.1.1 OPERATION - LOCAL

1) Be sure LINE circuit breaker and all controls of power source are in the OFF position.

2) Connect suitable loads across terminals. (Do not exceed rating of unit).

3) Rotate VOLTS ADJ. AND FREQ. ADJ. controls on oscillator fully counter clockwise.

4) Place LOCAL/REMOTE switch on oscillator in LOCAL position.

5) Place LINE circuit breaker in ON position.

6) Rotate VOLTS ADJ. control clockwise until desired voltage is obtained, as observed on output voltmeter. See Figure 1.

7) Place OUTPUT switch to ON position to energize load.

8) Rotate FREQ. ADJ. control clockwise until desired frequency is obtained. Frequency can be observed on the digital display meter. See Figure 1.

9) For further operation procedures see OPERATION section (SECTION 3) of the power source user's manual.

3.1.2 SHUTDOWN PROCEDURE - LOCAL

1) Place OUTPUT switch of power source in OFF position.

2) Rotate VOLTS ADJ. control fully counterclockwise.

3) Place LINE circuit breaker in OFF position.

3.2 OPERATION - REMOTE

1) Be sure LINE circuit breaker and all controls of power source are in OFF position.

2) Connect suitable loads across terminals. (Do not exceed rating of unit).

3) Place LOCAL/REMOTE switch on oscillator in REMOTE position.

4) For further operation procedures see OPERATION section (SECTION 3) of the power source user's manual.

3.2.1 SHUTDOWN PROCEDURE - REMOTE

1) Place OUTPUT switch/s in OFF position.

2) Reduce output voltage to zero.

3) Place LINE circuit breaker in OFF position.

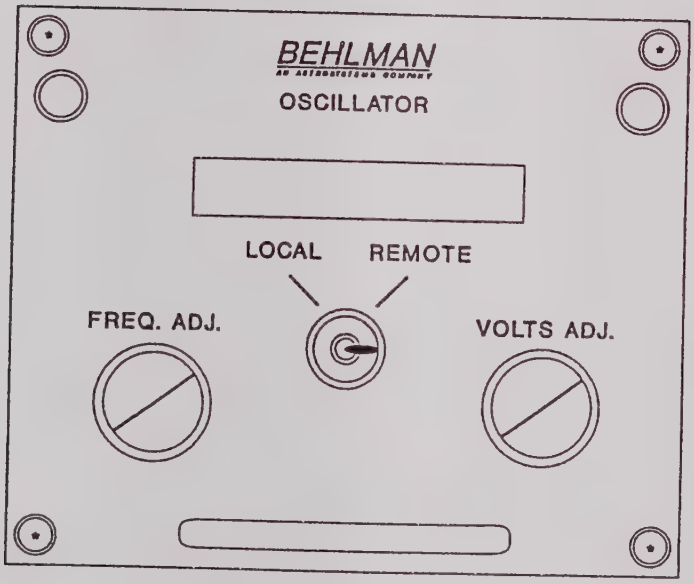

Figure 1. Oscillator Front Panel

SECTION 4 THEORY OF OPERATION

4.1 ELECTRICAL DESCRIPTION

In generation of its outputs, the reference oscillator uses digital techniques. As shown in Figure 2, an 8-bit counter addresses a PROM that has a sine function stored in its memory. The PROM output feeds a multiplying digital-to-analog converter whose sinewave output varies in direct proportion to the DC reference input. An eight-bit counter in the feedback of a phase-locked loop allows the oscillator to be controlled by either an on-board VCO or an external sync signal. Additional PROMS with different phase location of the sine function and M-DACs generate second and third outputs.

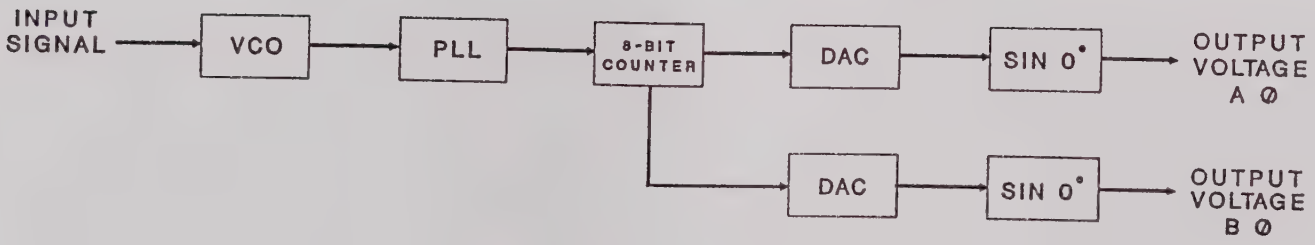

Figure 2. Oscillator Block Diagram

SECTION 5

PARTS LIST AND DRAWINGS

TOP LEVEL BILL OF ITEM 106-410-301 OSC ASSY (OSN = 45 2.5K-STRFV-

ITEM NUMBER	DESCRIPTION	Q-FLAGGED	UNIT MEA	M P	STYP	QUANTITY
106-405-100	OSCILLATOR BD ASS'Y REV:C		EA	M	S	1.000
106-405-101	P.W.B.		EA	P	S	1.000
100-128-020	CAP MICA 500V 68PF		EA	P	S	1.000
100-128-048	CAPACITOR CM06FD152J03		EA	P	S	1.000
106-450-002	HEADER,STRAIGHT		EA	P	S	3.000
106-451-000	I.C. TL084CN		EA	P	S	3.000
106-452-000	IC,MM74HC4046N		EA	P	S	1.000
106-453-000	IC, 74HC193		EA	P	S	2.000
106-607-000	PROM SINE,0		EA	P	S	1.000
106-609-000	PROM,SINE,120		EA	P	S	1.000
106-455-000	IC, AD7524JN		EA	P	S	2.000
106-456-000	IC AD650JN		EA	P	S	1.000
106-457-000	IC, MM74HC4049		EA	P	S	1.000
106-458-000	IC, LM311N		EA	P	S	1.000
101-463-000	I.C. MC7805CT		EA	P	S	1.000
106-459-000	REGULATOR LM336Z-5.0		EA	P	S	1.000
106-461-000	DIODE, RECT, 1N6263		EA	P	S	2.000
106-462-000	DIODE, RECT, 1N965		EA	P	S	1.000
106-463-000	DIODE, 1N4148		EA	P	S	2.000
106-464-204	POT,CERMET,3296F,MULTI		EA	P	S	1.000
106-464-103	POT,CERMET,3296W,MULTI		EA	P	S	1.000
106-466-562	RESISTOR, CARB, RCR07, 5.6K		EA	P	S	1.000
106-466-273	RESISTOR, CARB, RCR07,27K		EA	P	S	1.000
106-466-104	RESISTOR CARB RC07 100K		EA	P	S	1.000
106-466-513	RESISTOR CARB RCR07 51K		EA	P	S	2.000
106-471-102	RESISTOR,FILM,RNC55,11K		EA	P	S	1.000
106-471-742	RESISTOR,FILM,RNC55,17.4K		EA	P	S	1.000
106-473-482	RESISTOR 34.8K 1% 1/4W		EA	P	S	1.000
106-470-TOT	RESISTOR, FILM, RNC55, TOT		EA	P	S	1.000
106-472-612	RESISTOR,FILM,RNC55 26.1K		EA	P	S	2.000
106-466-102	RESISTOR, CARB, RCR07, 1K		EA	P	S	3.000
106-466-512	RESISTOR CARB,RCR07,5.1K		EA	P	S	2.000
106-466-105	RESISTOR, CARB, RCR07, 1M		EA	P	S	1.000
106-471-002	RESISTOR, FILM RNC55, 10K		EA	P	S	12.000
9001	REF DES		EA	P	S	0.000
9002	REF DESIGNATION		EA	P	S	0.000
106-473-833	RESISTOR,FILM,RNC55,383K		EA	P	S	1.000
106-466-225	RESISTOR,CAR,RCR07,2.2M		EA	P	S	1.000
106-466-333	RESISTOR, CARB, RCR07, 33K		EA	P	S	1.000
106-466-103	RESISTOR, CARB, RCR07, 10K		EA	P	S	3.000
106-471-001	RESISTOR, FILM, RNC55, 1K		EA	P	S	2.000
106-464-502	POT,CERMET,3296W,MULTI		EA	P	S	2.000
100-588-012	RESISTOR DALE RS28 25 OHM 5%		EA	P	S	1.000
106-502-067	CAP ELEC,10UF 35V		EA	P	S	5.000
100-093-055	CAP,ELEC,22UF,25V		EA	P	S	2.000
106-482-103	CAP,NPO,DG46DY,.01UF		EA	P	S	2.000
106-481-104	CAP CERAM CKR06 0.1UF		EA	P	S	6.000
9003	REF DESIGNATION		EA	P	S	0.000
106-480-102	CAP CERAM CKR05,1000PF		EA	P	S	1.000
106-481-334	CAP,CERAM, CKR06, .33UF		EA	P	S	1.000
106-481-105	CAPACITOR CKR06BX105K		EA	P	S	2.000
106-480-101	CAP CERM,CKR05 100P		EA	P	S	1.000

TED LEVEL BILL FOR ITEM 106-410-301 OSC ASSY (OSN-*-45/2.5K-S)REV-

ITEM NUMBER	DESCRIPTION	Q-FLAGGED	UNIT MEA	M P	STYP	QUANTITY
106-643-000	CAP, .1UF NPM0104J400		EA	P	S	1.000
100-128-024	CAP MICA 500V 100PF		EA	P	S	2.000
106-645-004	TERM BLK RT ANG 200 CL 4P		EA	P	S	5.000
106-436-002	TERM BLOCK WIELAND 25.163.0253		EA	P	S	0.000
106-436-003	TERM BLOCK WIELAND 25.163.0353		EA	P	S	0.000
106-642-000	RELAY,DPST,W171DIP-25		EA	P	S	1.000
106-435-000	HEATSINK,TO-220		EA	P	S	1.000
102-491-000	FET BS170 60V .5A		EA	P	S	1.000
106-484-002	SHUNT, 2 POSITION		EA	P	S	0.000
MS51957-13	SCREW PAN HD,#4X.25		EA	P	S	1.000
2300019-004	NUT HEX 4-40		EA	P	S	1.000
100-096-006	SKT IC OPEN FRAME 20PIN		EA	P	S	2.000
106-405-001	SCHEMATIC DIA		EA	M	S	0.000
06-408-301	FP OSC (OSN-*-45/2.5K-S) REV:-		EA	P	S	1.000
01-131-000	CONNECTOR WIRE PRO 264100-16P		EA	P	S	1.000
IEL	DELETED ITEM		EA	P	S	0.000
06-429-011	POTENTIOMETER 73JB 100K OHMS		EA	P	S	2.000
06-431-000	KNOB SKIRTLESS,INDIC		EA	P	S	2.000
00-964-000	FSTNR THUMBSCREW		EA	P	S	2.000
S51957-13	SCREW PAN HD,#4X.25		EA	P	S	2.000
S51957-30	SCREW PAN HD #6X.50		EA	P	S	13.000
06-433-006	CONN ELCO 60-9021-3064-10-000		EA	P	S	1.000
00-005-003	WASHR FLT NYLON #6		EA	P	S	4.000
06-449-229	STANDOFF		EA	P	S	4.000
06-434-000	CONTACT, CONN MATE CRIMP		EA	P	S	6.000
00-962-000	HNDL RND 2.25"		EA	P	S	1.000
OCTITE	LOCTITE BLUE		EA	P	S	0.000
06-420-000	P.W.B. ASSY, DISPLAY		EA	M	S	1.000
106-419-000	PWB,DISPLAY		EA	P	S	1.000
106-435-000	HEATSINK,TO-220		EA	P	S	1.000
100-007-002	NUT HEX KEP 4-40		EA	P	S	1.000
100-006-002	WASHR LK SPLIT #4		EA	P	S	1.000
100-000-003	PAN PHLP 4-40X.500		EA	P	S	1.000
100-095-002	I.C. SOCKET SPC TECH 31N-29-19		EA	P	S	5.000
106-432-006	CONN ELCO 00-9021-0611-00-392		EA	P	S	1.000
100-032-000	LED DISPLAY H.P. 5082-7613		EA	P	S	5.000
101-463-000	I.C. MC7805CT		EA	P	S	1.000
101-368-000	DIODE ITT 1N914B3		EA	P	S	1.000
101-506-000	XTAL SRX1092 5.2488MHZ		EA	P	S	1.000
106-531-000	I.C. HARRIS CA3140E		EA	P	S	2.000
101-446-000	I.C. HARRIS CD4046BE		EA	P	S	1.000
101-450-000	I.C. HARRIS CD4518BE		EA	P	S	1.000
101-489-000	I.C. HARRIS ICM7207AIPD		EA	P	S	1.000
101-519-000	I.C. HARRIS ICM7208IPI		EA	P	S	1.000
100-588-012	RESISTOR DALE RS2B 25 OHM 5%		EA	P	S	1.000
100-193-060	RESISTOR RN55D2002F		EA	P	S	2.000
100-193-051	RESISTOR RN5501002F		EA	P	S	1.000
100-193-015	R MF 1P 1/4W 1.0K		EA	P	S	2.000
100-193-005	R MF 1P 1/4W 174		EA	P	S	1.000
100-193-024	R MF 1P 1/4W 2.61K		EA	P	S	1.000
100-193-074	R MF 1P 1/4W 51.1K		EA	P	S	1.000
100-193-025	R MF 1P 1/4W 3.01K		EA	P	S	1.000

NTED LEVEL BILL FOR ITEM 106-410-301 OSC ASSY (OCXO-* 45/2.5K-5/5)

ITEM NUMBER	DESCRIPTION	Q-FLAGGED	UNIT MEA	M P	STYP	QUANTITY
100-123-115	R MF 1P 1/4W 1.0M		EA	P	S	1.000
100-193-002	R MF 1P 1/4W 100		EA	P	S	1.000
106-502-067	CAP ELEC,10UF 35V		EA	P	S	2.000
100-154-000	CAPACITOR AVX SR205E104MAA		EA	P	S	3.000
100-128-005	CAP CM05ED100D03		EA	P	S	3.000
106-502-055	CAP, ELEC,22UF 25V		EA	P	S	1.000
100-128-020	CAP MICA 500V 68PF		EA	P	S	1.000
100-128-009	CAP CM05ED240J03		EA	P	S	1.000
106-418-000	SCHEMATIC DIA		EA	M	S	0.000
106-417-000	LENS DISPLAY OSCILLATOR		EA	P	S	1.000
APE,D.S.	TAPE, DOUBLE SIDED		EA	P	S	0.000
2 AWG, WHT	WIRE, ELEC.		EA	P	S	0.000
22 AWG, ORG	WIRE, ELEC		EA	P	S	0.000
22 AWG, VIO	WIRE, ELEC.		EA	P	S	0.000
2 AWG, BLK	WIRE, ELEC.		EA	P	S	0.000
22 AWG, RED	WIRE, ELEC		EA	P	S	0.000
106-409-000	LABEL, IDENT		EA	P	S	1.000
06-421-301	WIRE DIAG		EA	P	S	0.000
06-422-301	TEST SPEC'		EA	P	S	0.000
106-443-000	PLATE MOUNTING 16 PIN		EA	M	S	1.000
106-443-001	PLATE MOUNTING		EA	P	S	1.000
106-438-122	STANDOFF		EA	P	S	2.000
EL	DELETED ITEM		EA	P	S	0.000
100-866-000	SWITCH ALCO MTG-206N		EA	P	S	1.000
06-633-000	LABEL LOCAL/REMOTE		EA	P	S	1.000
06-466-104	RESISTOR CARB RC07 100K		EA	P	S	1.000

TB1
20
11
VR6
R41
C13
VR2
U1
VR3
R22
R21
R28
R20
C16
R43
C21
C17
R48
U2
C20
R37
R33
R35
R49
VR4
R36
R32
R29
R30
K1
C22
R31
C18
Q1
U7
U9
U6
C3
C4
U8
U4
C9
U5
C6
C15
C5
ASSY 106-405-100

1
1
C7
C2
C1
JP1 JP2 JP3
R14
R13
R12
R25
R24
C11
R16
R45
R46
R17
R18
R39
R40
R26
R11
R8
R27
C14
U10
R42
VR1
R38
R34
R10
CR1
R9
R44
R47
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CR2
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C8
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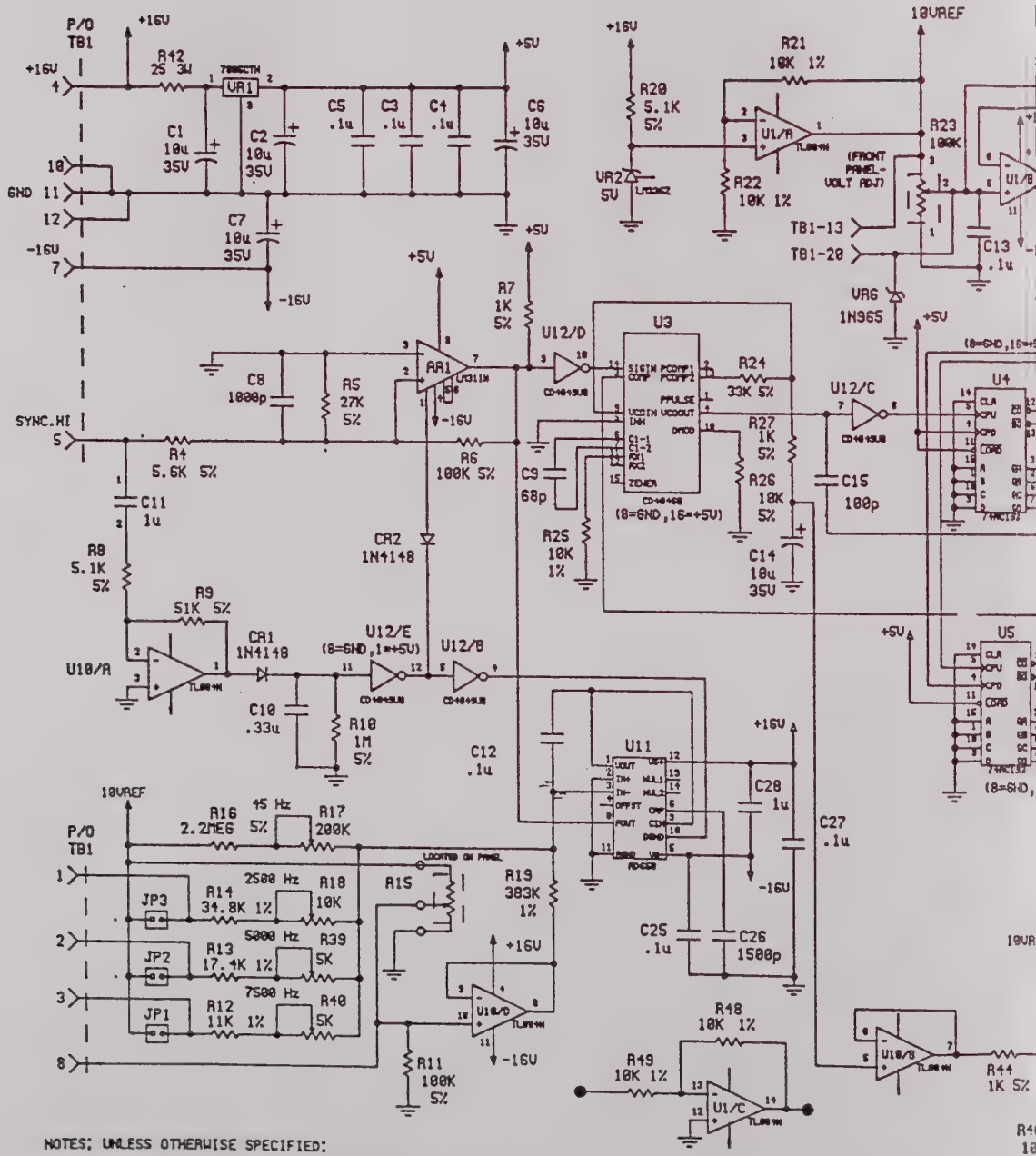
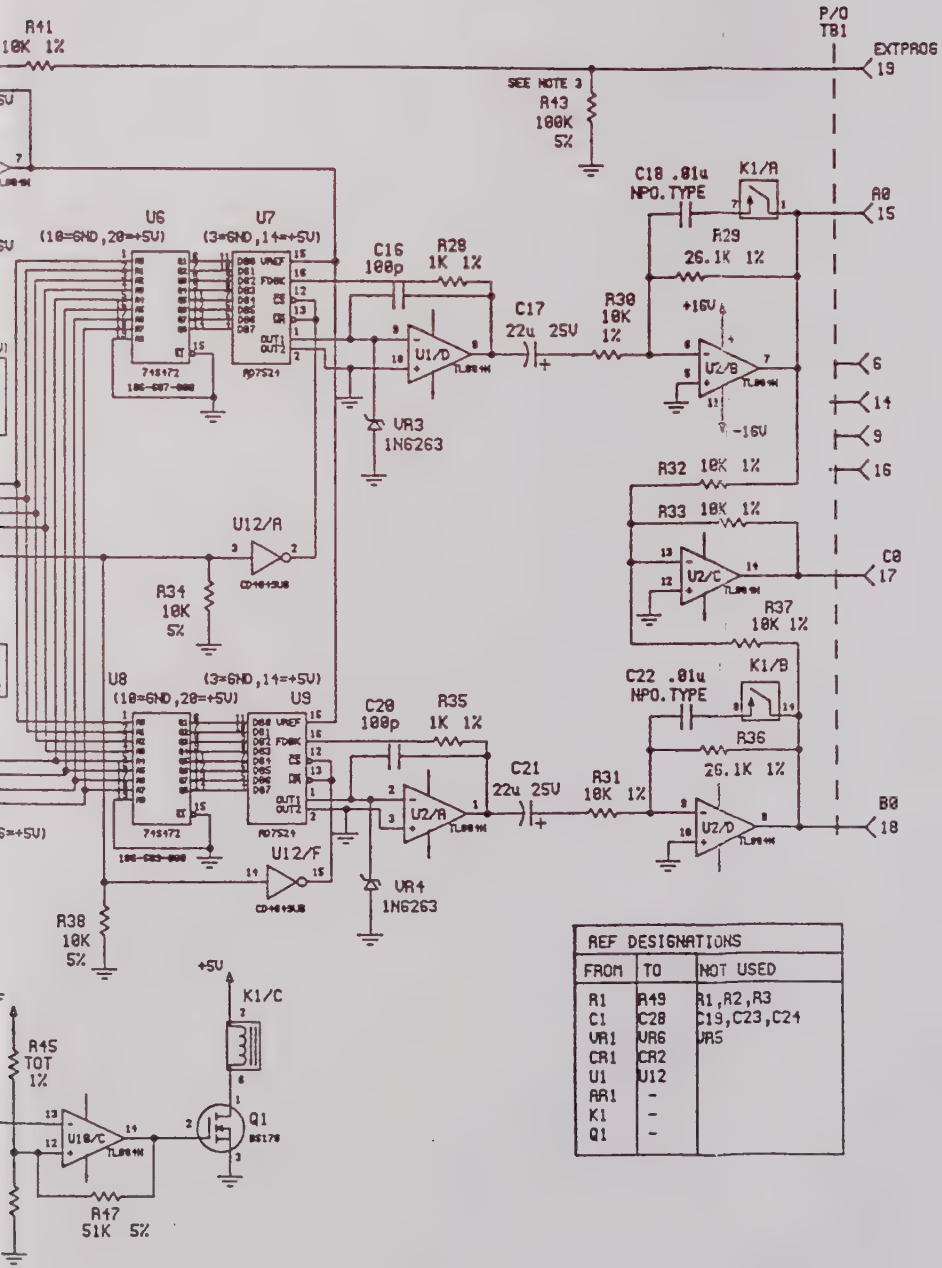
R4
R5

106-405-100



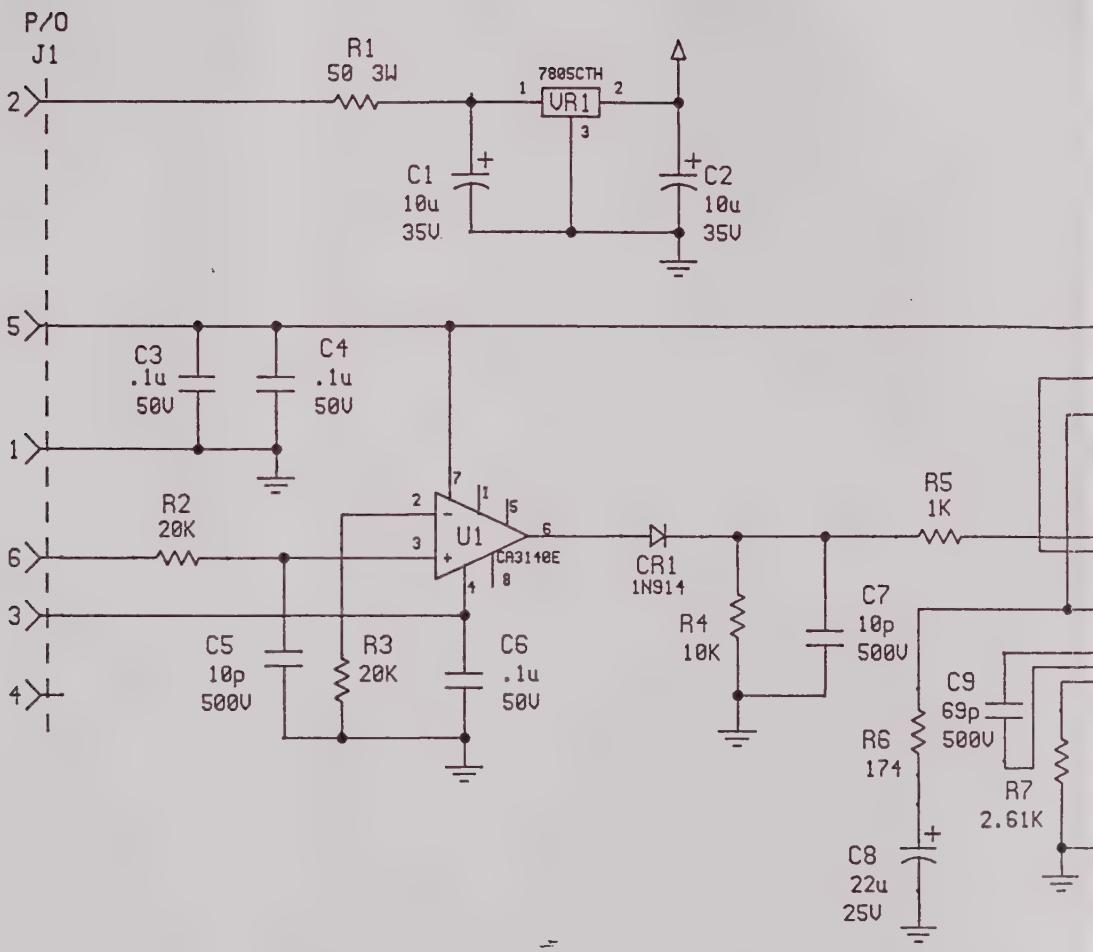
NOTES: UNLESS OTHERWISE SPECIFIED:

1. R6 ARE FOR FUTURE DESIGNS AND ARE NOT CURRENTLY USED ON ANY BD.
2. R23 & R15 ARE PANEL MOUNTED POTS AND DO NOT GET INSTALLED ON ANY BD.
3. R43 IS USED ONLY ON AN OSCILLATOR WITH 4N OR OPTION. SEE SALES ORDER.



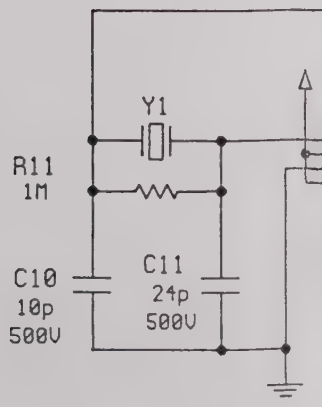
REF DESIGNATIONS		
FROM	TO	NOT USED
R1	R49	R1,R2,R3
C1	C28	C19,C23,C24
VR1	VR6	VR5
CR1	CR2	
U1	U12	
RR1	-	
K1	-	
Q1	-	

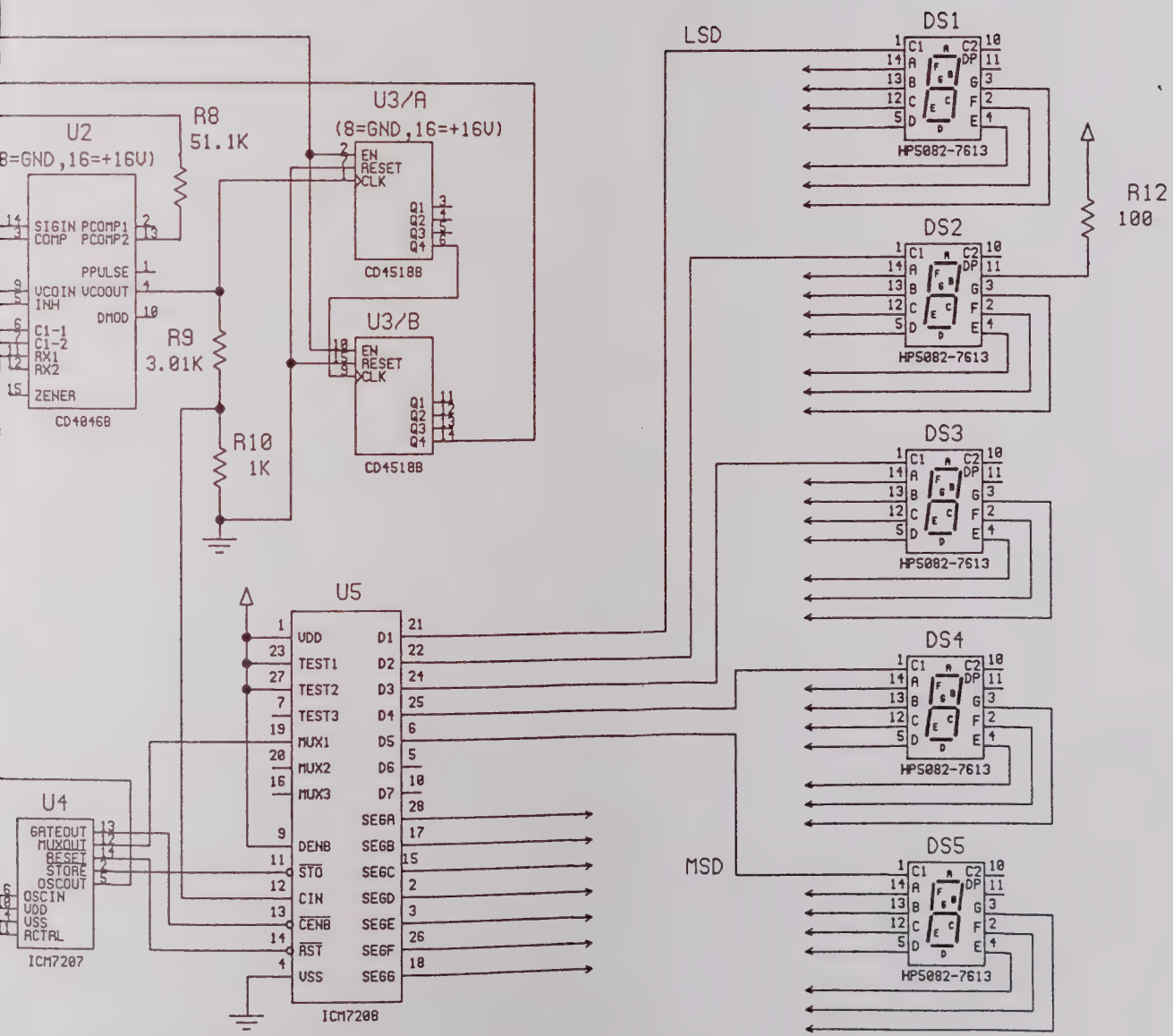
106-405-001



NOTES;UNLESS OTHERWISE SPECIFIED:

1. ALL RESISTORS ARE 1/4W,1% - METAL FILM.
2. ALL CAPACITORS ARE CK06.

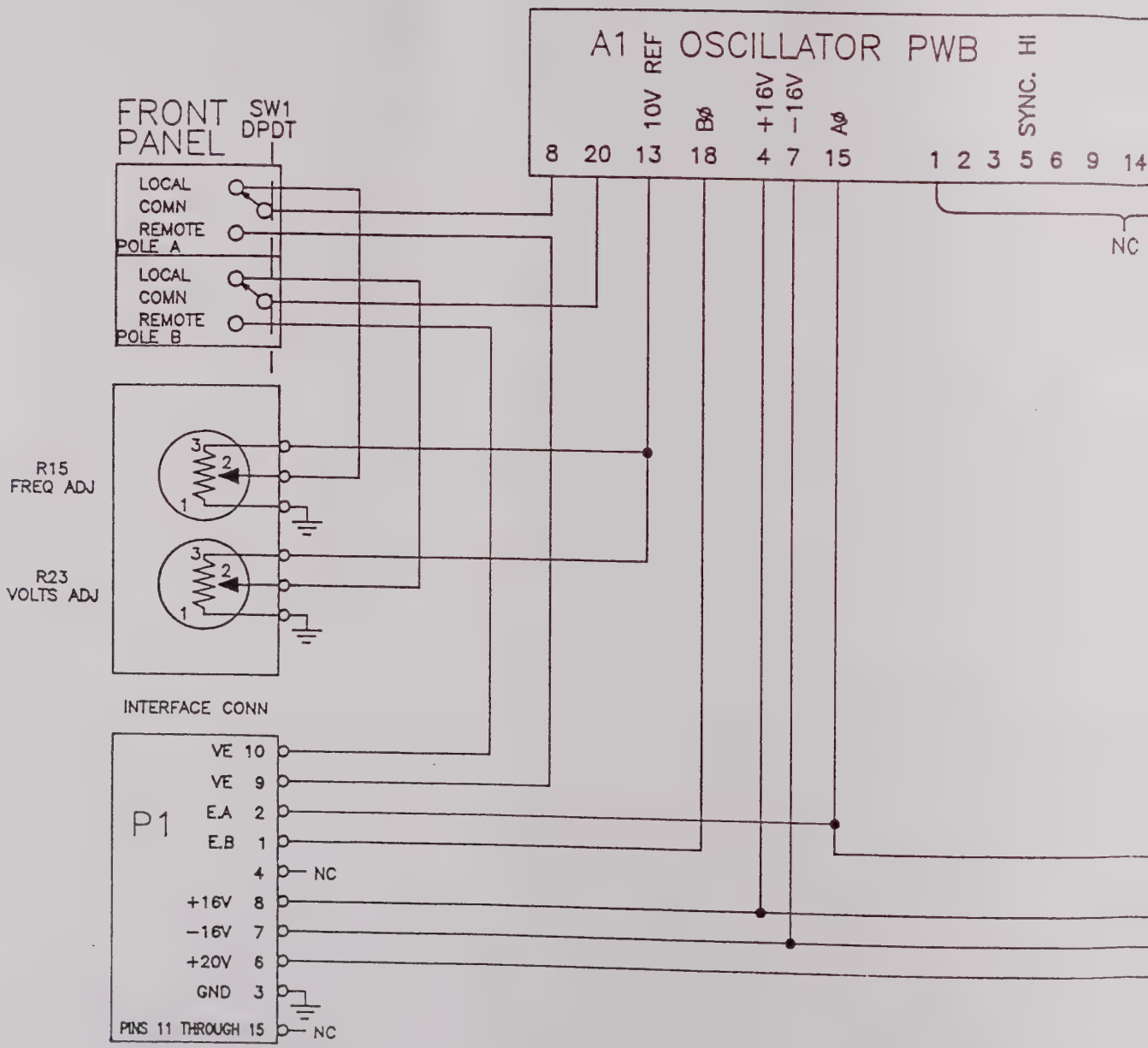



U2
8=GND,16=+16V)
SIGIN PCOMP1
COMP PCOMP2
PPULSE
VCOIN VCOOUT
INH
DMOD
C1-1
C1-2
RX1
RX2
ZENER
CD4046B
R8
51.1K
R9
3.01K
R10
1K
U3/A
(8=GND,16=+16V)
EN
RESET
CLK
Q1
Q2
Q3
Q4
CD4518B
U3/B
CD4518B
U5
VDD
TEST1
TEST2
TEST3
MUX1
MUX2
MUX3
DENB
STO
CIN
CENB
RST
VSS
D1
D2
D3
D4
D5
D6
D7
SEGA
SEGB
SEGC
SEGD
SEGE
SEGF
SEGG
ICM7208
U4
GATEOUT
MUXOUT
RESET
STORE
OSCOUT
OSCIN
VDD
VSS
ACTRL
ICM7207
LSD
MSD
DS1
DS2
DS3
DS4
DS5
HPS082-7613
R12
100

106-418-000

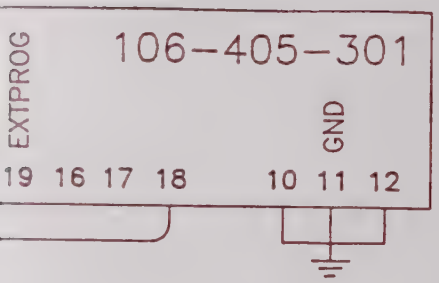
R1
C1
C2
U3
VR1
U5
R12
R9
R10
C3
C4
U4
DS5
DS4
DS3
C10
R11
Y1
C11

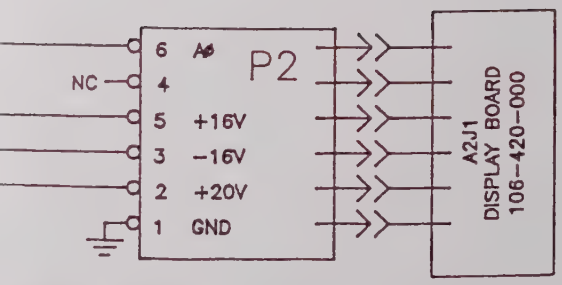
106-420-000



	106-410-301
NEXT ASSY	USED ON
APPLICATION	

REV STATUS OF SHT		REVISIONS				
REV	SHT	ZONE	LTR	DESCRIPTION	DATE	APPROVED
			A	ECO 91-203	91-10-10	





OSCD-45/25K-08-11-12-13(90°) SWITCH

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. TOLERANCES: FRAC ± 3 PLACE DEC ± 2 PLACE DEC ± ANGLES ±	CONTR	BEHLMAN An Astrosystems Company	
	DR J.ALGERIO DATE 91-08-07 CHK JB DATE 91-08-12	OSCILLATOR WIRE DIAG. OSCD-45/25K-08-11-12-13	
DO NOT SCALE THIS DWG	APPD T.MURRY DATE 91-08-12		
MATERIAL		SIZE B / CODE IDENT NO. 53636 / 106-421-301 / REV A	
		SCALE NONE	SHEET

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